

LISTING OF CLAIMS

No claims are amended herein.

1. (Previously Presented) A method of manufacture of a substantially nugget-free cheese comprising:

(a) dispersing in milk or water or other aqueous solutions a dried HY-MPC having at least 55% SNF as milk protein;

(b) treating the resulting mixture with one or more coagulating enzymes to produce a curd; and

(c) processing the curd to make cheese

wherein the dried HY-MPC is a MPC or MPI having whey proteins denatured to allow whey proteins to be incorporated into cheese in higher yield than the resulting yield when the corresponding MPC or MPI without denaturation of whey proteins is used, wherein the whey proteins are heat denatured at pH 6.0-7.0 and wherein the dried HY-MPC is a calcium depleted milk protein product and the extent of calcium depletion is sufficient to allow the manufacture of substantially nugget-free cheese.

2. (Original) A method as claimed in claim 1 wherein the dried HY-MPC has at least 70% SNF as milk protein.

3. (Previously Presented) A method as claimed in claim 1 wherein the HY-MPC product has a solubility higher than that of the MPC or MPI without calcium depletion.

4. (Original) A method as claimed in claim 3 wherein at least 40% of the HY-MPC is cold soluble.

5. (Previously Presented) A method as claimed in claim 1 wherein the cheese undergoes further processing to produce a processed cheese or a processed cheese product.

6. (Previously Presented) A method as claimed in claim 1 wherein cheese comprises 50 to 100% of the total whey proteins from the HY-MPC.

7. (Previously Presented) A method as claimed in claim 1 wherein the HY-MPC has been prepared using heating for 4-15 minutes at greater than 100°C.

8. (Previously Presented) A method as claimed in claim 1 wherein the HY-MPC has 85% dry matter as milk protein, and a calcium depletion of 30 to 100%.

9. (Previously Presented) A method as claimed in claim 1 wherein HY-MPC has 70-80% dry matter as milk protein and the calcium depletion is 20-100%.

10. (Previously Presented) A method of cheese manufacture which includes the step of adding a 10-100% calcium depleted HY-MPC to milk containing fat or any other aqueous solution used as the starting material, wherein the whey proteins are heat denatured at pH 6.0-7.0.

11. (Previously Presented) A method of cheese manufacture comprising:

(a) dispersing in milk a dried HY-MPC having at least 70% SNF as milk protein;

(b) treating the resulting mixture with one or more coagulating enzymes to produce a curd, and

(c) processing the curd to make cheese;

wherein the dried HY-MPC is a MPC or MPI having whey proteins denatured to allow whey proteins to be incorporated into cheese curd in higher yield than the resulting yield when the corresponding MPC or MPI without denaturation of whey proteins is used, wherein the whey proteins are heat denatured at pH 6.0-7.0 and wherein the dried HY-MPC is a calcium depleted milk protein product and the extent of calcium depletion is 30-100%.

12. (Previously Presented) A method for preparing a dried high denatured whey protein content HY-MPC product comprising:

(a) providing an ultrafiltered skim milk or whole milk, or buttermilk, or any other aqueous protein solution, in the form of an aqueous solution/suspension having at least 70% SNF as milk protein;

(b) removing 20-100% of calcium ions therein by a method chosen from at least one of

(i) cation exchange on an ion exchanger in the sodium, potassium, sodium and potassium, or hydrogen form,

(ii) acidification to pH <7 with subsequent dialysis and/or ultrafiltration, diafiltration, or a combination thereof; and

(iii) addition of chelating agent; and/or binding a proportion of calcium ions with a chelating agent;

(c) heating the solution at a temperature, for a time sufficient to allow denaturation of whey proteins and interaction with casein,

(d) drying to prepare a dried product;

wherein after step (b) the pH of the solution is adjusted if necessary so that the heating at step (c) is carried out on a solution having a pH of 6.0-7.0,

13. (Previously Presented) A method as claimed in claim 12 wherein after step (b) the pH of the solution is adjusted if necessary so that the heating at step (c) is carried out on a solution having a pH of 6.5-7.0.

14. (Previously Presented) A method as claimed in claim 12 wherein the whey proteins are denatured to allow 50-100% of the whey proteins to be incorporated into cheese following treatment with coagulation enzymes and separation of curds and whey.

15. (Previously Presented) A method as claimed in claim 12 wherein step (b) is carried out by cation exchange on an ion exchanger.

16. (Previously Presented) A method as claimed in claim 12 wherein the product from step (b) is mixed with another milk or other aqueous protein solution while maintaining at least 30% calcium depletion.

17. (Previously Presented) A method as claimed in claim 12 wherein the heated solution from step (c) is concentrated by evaporation prior to step (d).

18. (Original) A method for manufacture of milk protein product comprising at least 70% milk protein with high denatured whey protein content comprising:

(a) providing an ultrafiltered skim milk or whole milk, butter milk, or any other aqueous protein solution, in the form of an aqueous solution/suspension with at least 70% SNF as milk protein,

(b) removing at least 30% of the calcium content,

(c) denaturing whey proteins in the calcium depleted product by heating the solution at pH 6.0-7.0 at a temperature, and for a time sufficient to allow denaturation of whey proteins, or by applying an ultra high pressure treatment,

(d) drying to prepare a dried product with a denatured whey protein content approximately the same as the whey protein content of skim milk.

19. (Previously Presented) A method as claimed in claim 18 the denaturation of whey proteins is achieved by a treatment or combinations of treatments selected from :

direct steam injection;
indirect heating using for plate heat exchangers;
ohmic heating;
microwave heating; and
alkali treatment followed by neutralisation

20. (Cancelled)

21. (Previously Presented) A method as claimed in claim 18 wherein the heat treatment is by heating the solution at pH 6.5-7.0 at a temperature, and for a time sufficient to allow denaturation of whey proteins.

22. (Previously Presented) A method as claimed in claim 18 wherein the heating is indirect heating.

23. (Previously Presented) A method as claimed in claim 18 wherein the product from step (b) is mixed with another milk or other aqueous protein solution while maintaining at least 30% calcium depletion.

24. (Previously Presented) A method as claimed in claim 18 wherein the product of step (c) is concentrated by evaporation prior to step (c).

25. (Original) A dried HY-MPC having 20-100% depletion of calcium.

26. (Previously Presented) A dried HY-MPC as claimed in claim 25 wherein the percentage calcium depletion is 30-100%.